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REMARKS

Information Disclosure Statement

An Supplemental Information Disclosure Statement (IDS) is being filed concurrently herewith. Entry of the Supplemental IDS is respectfully requested.

Interview Summary

Applicant's Attorney, Applicant's Agent and Assignee's Representative would like to thank the Examiner and the Primary Examiner for conducting the telephonic interview of August 14, 2003.

The objective of the interview was to discuss Applicant's Reply of July 9, 2003 and the Advisory Action mailed July 31, 2003. During the interview, Applicant's Agent and Applicant's Attorney clarified that the Reply was not arguing the propriety of a Restriction Requirement made in a continuing application, as was stated in the Advisory Action. Instead, the Reply argued that a consistent standard of patentability should be applied to both the parent and the continuing applications.

The Examiners requested that arguments regarding the merits of the obviousness rejection be provided. Applicant's Agent and Applicant's Attorney pointed out where such arguments could be found in the Reply. However, in order to assist with the Examiners' request, Applicant provides herewith detailed arguments on the merits of the rejection of Claims 1-23 and 30-38 under 35 U.S.C. § 103(a) over U.S. Patent No. 5,412,087 (hereinafter referred to as "the '087 Patent") in view of WO 98/39348 (hereinafter referred to as "the '348 Publication").

Claims 1-23 and 30-38 Are Not Obvious over U.S. Patent No. 5,412,087 in view of WO 98/39348

The remarks contained herein are intended to elaborate upon issues already raised in the Reply of July 9, 2003. As such, the contents of the Reply are incorporated herein by reference in their entirety.

WO 98/39348

The '348 Publication discloses compounds that are useful as linking groups in chemical synthesis. The compounds are said to be generally photolabile and have protecting groups that

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can be removed by photolysis. The protecting groups are disclosed to have the general formula $\text{Ar-C(R}_1\text{)(R}_2\text{)-O-C(O)-}$, where Ar is an optionally substituted fused polycyclic aryl or heteroaromatic group or a vinylogous derivative thereof, and R₁ and R₂ are independently -H, optionally substituted alkyl, alkenyl or alkynyl, optionally substituted aryl or heteroaromatic or a vinylogous derivative of the foregoing.

Obviously, there are a vast number of protecting groups that would be encompassed by the '348 Publication. The specification discloses nearly 20 polycyclic aryl groups at page 8, lines 25-29. "Optionally substituted" is defined at page 6, lines 1-15 and includes unsubstituted, mono-, di- and tri-substituted groups. There are a total of 27 substituent groups disclosed. As a result, there are over 500 possible combinations of monosubstituted polycyclic aryl groups. This number does even take into account the selection of R₁ and R₂ or a polycyclic heteroaromatic group, nor does it take into account a polycyclic aryl group having zero, two or three substituents. In addition, this number does not account for positional isomers (i.e., where the substituent is attached to a different carbon atom in the polycyclic group). Clearly, a considerable selection needs to be made to arrive at any specific protecting group.

The '348 Publication provides some guidance in selecting substituents for the polycyclic aryl or heteroaromatic groups. However, it states at page 6, lines 8-11 that the substituents are preferably electron-donating substituents (e.g., a hydroxyl or a lower alkoxy group).

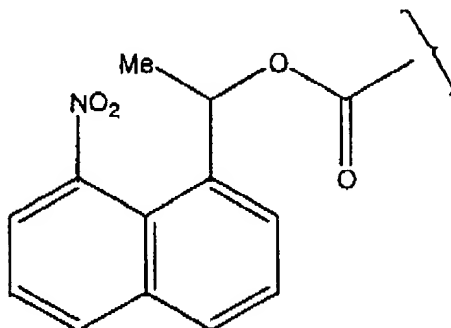
The only polycyclic groups that are part of a protecting group exemplified in the '348 Patent are pyrenyl and anthracenyl. Although Figure 3 shows a generic structure where a naphthyl group is substituted with one or more alkyl, substituted aromatic or electron-donating groups, the '348 Publication does not disclose any specific examples of protecting groups that include a naphthyl group.

The '348 Publication does not provide any examples of a naphthyl group substituted with an electron-withdrawing group. In particular, the '348 Publication does not provide any examples of a naphthyl group substituted with a nitro group.

In view of the large number of protecting groups that fall within the disclosure of the '348 Publication, some guidance is required to arrive at any particular protecting group. However, the '348 Publication suggests that if a polycyclic aryl or heteroaromatic group is substituted, then the

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substituent should be an electron-donating group. The polycyclic aryl group that is claimed in the present application has the following structure:



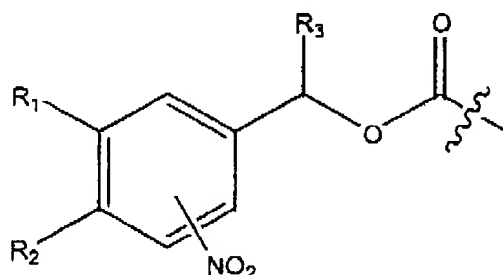
where the polycyclic aryl group, a naphthyl group, is substituted with a nitro group. Nitro groups are electron withdrawing.

The nature of a substituent group (i.e., whether it is electron donating or electron withdrawing) is expected to affect the properties of the molecule as a whole. For example, a substituent group can affect where light is absorbed, how strongly it is absorbed and/or how energy is transferred to a scissile bond. Thus, while the compounds encompassed by the genus disclosed by the '348 Publication are expected to be suitable protecting groups, the properties of these protecting groups would be expected to vary significantly depending on how the variables were chosen.

Based on the preferred substituent groups disclosed by the '348 Publication and based on the examples of protecting groups disclosed therein, one skilled in the art would not have been motivated to prepare a protecting group having an electron withdrawing substituent. In particular, one skilled in the art would not have been motivated to prepare a protecting group having a nitro group, particularly the protecting group shown above. Instead, the teachings of the '348 Publication would lead a skilled artisan to prepare a protecting group having either no substituents or one or more electron donating substituents on the polycyclic group. One skilled in the art would have expected properties to vary within the genus and would not generally consider a protecting group with an electronic donating group or no substituent group to be equivalent to a protecting group with an electron withdrawing (e.g., nitro) group.

U.S. 5,412,087

The Examiner relies on the '087 Patent in rejecting all protecting groups other than the one shown above. In particular, the Examiner relies on the following statement at column 8, lines 23-26 of the '087 Patent: "More preferably, the photosensitive protecting group will be a nitrobenzylic compound, such as o-nitrobenzyl or benzylsulfonyl groups." The '087 Patent continues with a list of several protecting groups, where 6-nitroveratryloxycarbonyl (NVOC), 6-nitropiperonyloxycarbonyl, methyl 6-nitroveratryloxycarbonyl, methyl 6-nitropiperonyloxycarbonyl and nitrobenzyloxycarbonyl are the examples of nitrobenzyl groups. These groups have the following core structure:



where R₁ and R₂ are each -H or -OCH₃ or taken together form -OCH₂O- and R₃ is -H or -CH₃.

None of the protecting groups recited in the present claims fall within this core structure. Instead, the protecting groups recited in the claims have one or more structural distinctions from this core structure. The first structural distinction is that the substitution pattern on the phenyl ring differs from the core structure. As discussed above, the substituents can affect properties such as the wavelengths of light absorbed by the protecting group, the amount of light absorbed by the protecting group, and/or the efficiency with which energy is transferred to the scissile bond. The second structural distinction is in the moiety that links the phenyl group to the scissile bond. None of the claimed molecules have a **single** methylene group linking the phenyl moiety to the scissile bond.

The claimed protecting groups have been misclassified in the Office Action as "nitrobenzylic" groups, as disclosed by the '087 Patent. In the nitrobenzylic groups of the '087 Patent, there must be a **single** methylene linking group between the nitrophenyl group and the scissile bond. None of the claimed protecting groups have a **single** methylene group, so none of these protecting groups are nitrobenzylic groups as disclosed by the '087 Patent. Thus, the

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instant claims cannot properly be rejected on the sole basis that they are encompassed within the broad generic disclosure of a prior art reference. Moreover, no justification has been provided as to why one would expect that a protecting group **without** a single methylene linking group would be equivalent to a protecting group with a single methylene linking group. Similar to substituent groups, the linking group would be expected to affect properties such as the wavelengths of light absorbed by the protecting group, the amount of light absorbed by the protecting group, and/or the efficiency with which energy is transferred to the scissile bond.

Accordingly, the teachings of the '087 Patent do not encompass the instantly claimed protecting groups. The Examiner has provided no basis for rejecting the protecting groups having a phenyl moiety, therefore, it is respectfully submitted that these protecting groups are not obvious in view of the art cited.

Summary

Claims 1-23 and 30-38 are rejected over the '348 Publication and the '087 Patent. Applicant has now demonstrated that the '348 Publication teaches away from the claimed protecting group having a naphthyl moiety as illustrated above. The claimed naphthyl-containing group is substituted with an electron withdrawing nitro group, while the '348 Publication teaches that electron donating groups are preferred. Furthermore, in view of the size of the genus of protecting groups disclosed by the '348 Publication, one skilled in the art would not have been motivated to prepare this protecting group

The remainder of the claimed protecting groups are rejected on the basis of the teachings of the '087 Patent. However, these protecting groups were not correctly classified in the Office Action. Contrary to the assertion made in the Office Action, these protecting groups are not nitrobenzylic groups as disclosed by the '087 Patent. Nitrobenzylic protecting groups of the '087 Patent have a **single** methylene linking group between the phenyl moiety and the scissile bond. Since none of the instantly claimed protecting groups are encompassed by the '087 Patent, it is respectfully submitted that there is no *prima facie* case of obviousness based on the cited art.

For the reasons presented above, the instant claims are not obvious over the cited references. Reconsideration and withdrawal of the rejection are respectfully requested.

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CONCLUSION

In view of the above remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By Jesse A. Fecker
Jesse A. Fecker, Ph.D.
Registration No. 52,883
Telephone: (978) 341-0036
Facsimile: (978) 341-0136

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